

SCHOOL OF
CIVIL ENGINEERING
INDIANA
DEPARTMENT OF HIGHWAYS

JOINT HIGHWAY RESEARCH PROJECT

JHRP-82-3

TRAFFIC SPEED REPORT NO. 115

A. J. van Wijk

R. M. Shanteau

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PURDUE UNIVERSITY

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TO: H. L. Michael, Director
Joint Highway Research Project

February 2, 1982

File: 8-3-3

FROM: R. M. Shanteau, Research Associate
Joint Highway Research Project

Project: C-36-10C

The attached Progress Report No. 115 is the report of the July-September 1981 study of free flow automobile and truck speeds on tangent, level and dry sections of rural interstate, 4-lane and 2-lane highways and on urban interstate highways in Indiana. The report has been prepared by Mr. A. J. van Wijk, Graduate Instructor in Research on our staff, with assistance from Ms. P. J. Tirschman, drafting assistant on our staff. The data were collected by Mr. G. K. Stafford of our staff. All phases of the study were directed by Professor R. M. Shanteau, Research Associate on our staff.

The overall results show an average free flow speed of 56.9 mph, up only 0.3 mph from 1980. In fact, speeds have not changed much since the implementation of the 55 mph speed limit in 1974.

This report includes a chart, Figure 2 on page 8, that graphically summarizes the results of summer free flow speed monitoring since 1970. Such charts have not been included in the Traffic Speed Reports since the summer study was combined with the study for compliance with the National Maximum Speed Limit in 1975. This chart shows that speeds of all classes of vehicles on all types of highways have not changed much since 1974. Generally speaking, the 55 mph speed limit caused the 85th percentile passenger car speeds to drop by about 7 mph, while the 15th percentile speeds remained unchanged.

Copies of this report will be sent to the Federal Highway Administration and the Indiana DOH. Copies of this report are requested for release to the Indiana State Police and other highway safety agencies, as is normal procedure for these reports.

Respectfully submitted,

Robert M. Shanteau

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Research Associate

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Interim Report
TRAFFIC SPEED REPORT NO. 115

by

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Project No.: C-36-10C

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Prepared as Part of an Investigation

Conducted by

Joint Highway Research Project
Engineering Experiment Station
Purdue University

in Cooperation with the
Indiana Department of Highways

The opinions, findings and conclusions expressed in this publication are those of the authors and not necessarily those of the Federal Highway Administration.

Purdue University
West Lafayette, Indiana
February 2, 1982

TRAFFIC SPEED REPORT NO.

This report is an analysis of spot speed observations made during the summer months, viz. June, July, August and September, of 1981 in Indiana. All observations were made of free-flowing vehicles on level, tangent sections of rural and urban highways under favorable conditions. All the observations were made during daylight.

This is the first report with exclusively summer observations since 1975. From 1976 until 1980 (Traffic Speed Reports Nos. 95 through 114) 14 primary and secondary stations as well as another 14 randomly selected stations were monitored every quarter.

A total of 14 speed monitoring stations were used for the study reported herein. These stations are divided into four categories, including four rural interstate locations, four rural four-lane locations, four rural two-lane locations and two urban interstate locations. These 14 locations are the same as the primary and secondary control stations monitored since 1975 in Indiana. Prior to 1975 only the twelve rural stations were monitored. The locations of the 12 rural stations are essentially the same since 1970 except for stations 4L-32 (old number 6 on US 52) and 2L-54 (old number 11 on US 31), which changed in 1975.

The speed limit at all the stations is 55 mph.

The site locations are given in Table 1 and shown in Figure 1.

The vehicles were classified as Indiana or Non-Indiana Passenger Cars and light (less than 5000 lbs. gross weight) or heavy (equal to or more than 5000 lbs. gross weight) trucks. Analysis was performed for each vehicle classification and for combined passenger cars or trucks.

Sample Size

A minimum of 200 vehicles in each direction were recorded using the free flow technique at each station. At least 25 of these vehicles were required to be heavy trucks (in each direction).

Equipment and Field Procedure

The observations for this study were obtained by use of a Radar Speed Meter. The meter was located in a van type vehicle parked as a disabled vehicle on the right shoulder or as a normally parked vehicle in an access driveway to the road. The van was equipped with one-way vision windows on the rear and side facing traffic so that approaching vehicles could not observe the speed measurement process. The observers were also equipped with CB radio equipment so as to

Table 1: Monitoring Locations

Rural Interstate Highways		
RI-6	I-65	7.5 Miles North of State Road 160
RI-21	I-69	1.6 Miles South of State Road 18
RI-12	I-74	0.1 Miles West of 109 Mile Marker
RI-34	I-65	2 Miles South of State Road 39
4-Lane Highways		
4L-17	US 52	150 Feet East of County Road 475 West
4L-32	US 30	2.9 Miles West of Wanatah City Limit Sign
4L-20	US 41	1.1 Miles North of State Road 2
4L-21	US 31	1.1 Miles South of State Road 38
2-Lane Highways		
2L-18	US 35	2.5 Miles East of I-69
2L-54	US 231	1.1 Miles South of State Road 234
2L-79	SR 25	0.7 Miles South of Americus
2L-91	SR 43	2 Miles South of Chalmers
Urban Interstate Highways		
UI-6	I-65	Just East of White River
UI-1	I-80	First Bridge East of Burr Street Interchange

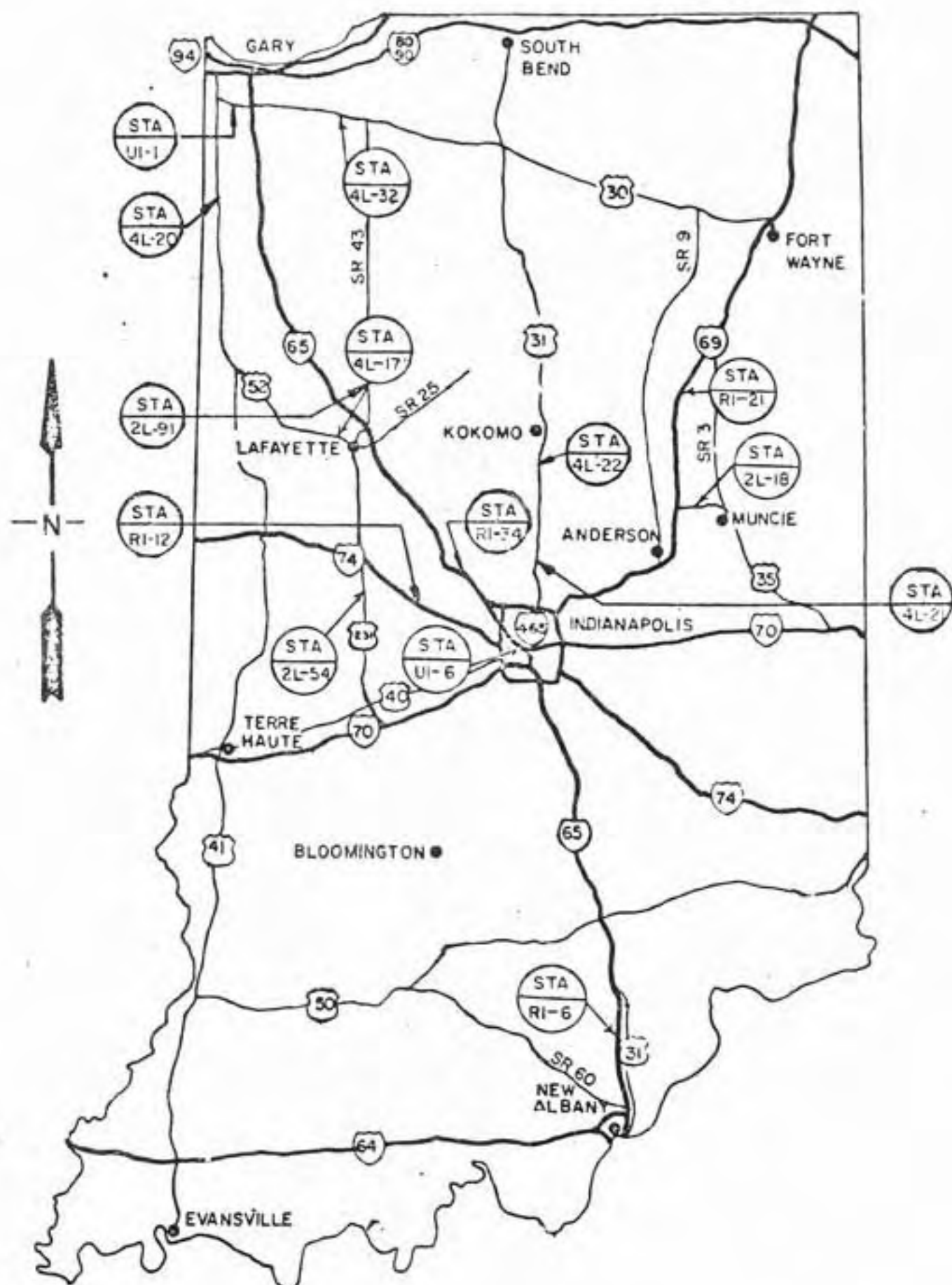


FIGURE 1 LOCATIONS OF SPEED-STUDY STATIONS

monitor possible radio notification of the speed measurement and of police vehicles in the area. When any such incidents occurred speeds were not taken for at least 15 minutes. This problem primarily occurs on interstates.

The speed was measured at a distance from the van so that the angle of measurement with the highway center line was always less than 10° . No corrections of speed were necessary at these small angles. The accuracy of the meter was checked at the beginning of each data recording session, every time the sampling technique was changed, and at other times when deemed necessary.

Results of Analysis

The data collected were analyzed and are summarized in the Appendix. Tables A1 through A14 include the data for the free flow data on each individual station. Tables A15 through A18 summarize the free flow data by highway classification. Table A19 is the summary for all highways.

The results of the free flow data expressed by highway classification and vehicle type are as follows:

Table 2: Average Speeds MPH

	Interstate		Other Rural		All
	Urban	Rural	Four Lane	Two Lane	
<u>Passenger Cars:</u>					
Indiana	57.7	57.9	56.5	55.7	56.7
Non-Indiana	58.5	59.6	58.0	56.2	58.7
All Passenger Cars	57.9	58.6	56.8	55.8	57.1
85 Percentile (all)	62.2	62.3	61.1	60.2	61.5
<u>Trucks:</u>					
Less than 5000 lbs.	57.2	57.4	56.3	55.0	56.3
5000 lbs. or more	56.5	58.8	56.1	54.7	56.6
<u>All Vehicles:</u>					
Average	57.4	58.5	56.6	55.4	56.9
85 Percentile	61.5	62.4	61.0	59.9	61.3

Table 3: Percent of Vehicles Exceeding 55 MPH

	Interstate		Other Rural		All
	Urban	Rural	Four Lane	Two Lane	
<u>Passenger Cars:</u>					
Indiana	66.4	72.2	59.9	52.5	60.7
Non-Indiana	83.0	86.4	72.3	55.4	79.4
All Passenger Cars	71.0	78.4	62.2	52.7	65.1
<u>Trucks:</u>					
Less than 5000 lbs.	66.9	66.8	55.1	48.2	57.7
5000 lbs. or more	60.0	77.2	61.5	49.7	63.1
All Trucks	63.3	71.8	58.3	48.9	59.2

Table 4: Percent of Vehicles Exceeding 60 MPH

	Interstate		Other Rural		All
	Urban	Rural	Four Lane	Two Lane	
<u>Passenger Cars:</u>					
Indiana	27.6	26.0	19.3	15.9	20.5
Non-Indiana	31.2	39.2	26.8	15.2	32.7
All Passenger Cars	28.6	31.8	20.7	15.8	23.4
<u>Trucks:</u>					
Less than 5000 lbs.	18.0	25.1	19.6	14.9	19.2
5000 lbs. or more	18.5	33.3	18.8	10.6	21.2
All Vehicles:	24.5	31.4	20.2	14.6	22.4

Table 5: Percent of Vehicles Exceeding 65 MPH

	Interstate		Other Rural		All
	Urban	Rural	Four Lane	Two Lane	
<u>Passenger Cars:</u>					
Indiana	5.7	3.3	3.3	3.8	3.8
Non-Indiana	2.8	7.4	5.9	1.1	5.7
All Passenger Cars	4.9	5.1	3.8	3.5	4.2
<u>Trucks:</u>					
Less than 5000 lbs.	4.5	3.7	2.8	1.6	2.9
5000 lbs. or more	2.4	6.6	2.8	1.1	3.5
<u>All Vehicles:</u>	4.2	5.3	3.5	2.8	3.9

The results of this study and similar studies conducted since 1970 are tabulated in Table 6. The speeds given in the table up to 1974 were obtained from Traffic Speed Report No. 92. The speed values for 1975 to 1978 were calculated from the tables given in the respective appendices of the reports (nos. 94, 98, 102, 106) for the 14 locations used in this study. The 15th and 85th percentile speed values were calculated by interpolation over 5 mph speed intervals. The same values for 1979, 1980 and 1981 were calculated by interpolation over 1 mph speed intervals in the raw data.

Table 6. Summary of Spot Speed Observations on Indiana Highways
(Free-Moving Vehicles on Level, Tangent Sections)

	Passenger Cars				Trucks		
	Indiana Mean	Non-Indiana Mean	All Mean	All 85%	Light Mean	Heavy Mean	All Mean
2-Lane Highways:							
1970	62.3	62.8	62.3	68.9	59.0	54.8	56.7
1971	61.4	60.9	61.3	68.0	58.0	54.0	55.6
1972	62.0	62.4	62.0	68.7	53.3	55.6	56.7
1973	62.1	61.4	62.1	68.7	58.7	56.4	57.3
1974	56.8	55.9	56.7	61.8	55.3	54.5	54.8
1975	57.2	57.4	57.8	62.9	57.5	56.2	56.9
1976	56.0	57.3	56.1	61.5	54.9	55.0	54.9
1977	56.7	56.2	56.7	62.3	56.3	54.7	55.4
1978	56.8	57.1	56.8	61.9	55.4	55.9	55.7
1979	56.4	56.0	56.4	60.5	55.1	55.6	55.4
1980	55.2	58.4	55.3	59.7	55.1	54.9	55.0
1981	55.7	56.2	55.8	60.2	55.0	54.7	54.8
4-Lane Highways:							
1970	64.6	64.3	64.5	70.6	59.7	55.0	54.2
1971	64.3	65.4	64.7	70.7	59.8	56.4	57.4
1972	64.3	64.3	64.3	70.9	59.4	55.2	57.1
1973	64.0	63.7	63.9	70.9	60.8	57.8	59.1
1974	58.0	57.9	58.0	63.1	56.8	54.4	55.3
1975	57.6	58.1	57.7	62.8	56.4	55.9	56.1
1976	57.0	57.2	57.1	62.3	55.5	56.6	54.7
1977	57.7	58.7	57.9	62.9	56.0	57.3	56.9
1978	57.5	57.8	57.5	62.5	56.0	57.7	56.9
1979	56.3	57.0	56.5	61.1	55.7	56.4	56.1
1980	55.9	57.4	56.2	60.5	55.3	56.4	55.9
1981	56.5	58.0	56.8	61.1	56.3	56.1	56.2
Rural Interstate Highways:							
1970	69.1	69.2	69.2	74.6	63.8	59.6	60.5
1971	68.3	68.7	68.5	73.7	64.8	59.4	60.8
1972	69.1	69.6	69.3	74.4	63.7	60.9	61.8
1973	69.3	70.1	69.6	74.8	64.1	61.6	62.3
1974	58.3	59.3	58.7	62.6	56.7	56.4	56.5
1975	59.7	60.2	59.9	64.2	58.2	59.3	58.9
1976	59.0	60.3	59.4	63.0	58.5	58.9	58.3
1977	60.4	60.5	60.4	65.4	58.4	59.7	59.3
1978	59.2	60.3	59.7	63.7	58.9	59.8	59.5
1979	58.4	58.9	58.6	62.4	57.6	59.3	58.7
1980	58.4	59.7	58.8	62.3	57.6	57.2	58.3
1981	57.9	59.6	58.6	62.3	57.4	58.8	58.4

Figure 2 represents a graphical presentation of the results from this and similar studies since 1970. The speed values plotted in Figure 2 were obtained in the same way as those in Table 6, except for the values from 1970 to 1974, which were obtained from a similar graph in the Traffic Speed Report No. 92. This was done to be consistent with the annual traffic speed reports up to 1974. Only data collected at the 12 rural stations were used to calculate the values given in Figure 2.

Table 7 displays the average speeds for all passenger cars, trucks of more than 5000 lbs. as well as trucks less than 5000 lbs. with and without the two urban interstate stations. The urban interstates were first monitored in 1975.

Table 7. Average Speeds (mph)

Year	Passenger Cars		Trucks Less Than 5000 lbs.		Trucks 5000 lbs. or More	
	12 Rural Stations	All 14 Stations	12 Rural Stations	All 14 Stations	12 Rural Stations	All 14 Stations
1975	58.5	58.7	57.2	57.4	57.8	57.5
1976	57.5	57.6	56.3	56.4	56.4	56.6
1977	58.2	58.2	57.7	57.8	57.0	57.1
1978	58.2	58.2	57.9	57.8	56.6	56.6
1979	57.1	61.8	57.2	57.0	56.0	56.1
1980	56.7	56.8	56.8	56.6	56.0	56.1
1981	57.0	57.1	56.7	56.6	56.1	56.3

CONCLUSIONS

The average speed of passenger cars on all types of highways in 1981 increased 0.4 mph from 1980. The largest increase was on 4-lane and 2-lane highways with increases of 0.6 mph each. The average speed of light trucks (trucks less than 5000 lbs.) increased only 0.2 mph. The largest increase occurred on the 4-lane highways with an increase of 1.0 mph. This was followed by an increase of 0.6 mph on urban interstates. The average speed for the heavy trucks (5000 lbs. or more) remained the same since 1980. The largest increase, 0.8 mph, occurred on the urban interstates and the largest decrease, 0.3 mph, on 4-lane highways (Tables A15-19). These changes are very small.

The very small changes are also illustrated by Figure 2. The mean speeds of cars, light and heavy trucks on rural highways remained virtually the same since 1979. The mean speeds dropped sharply from the summer of 1973 to the summer of 1974. They increased a little in 1975 and remained fairly

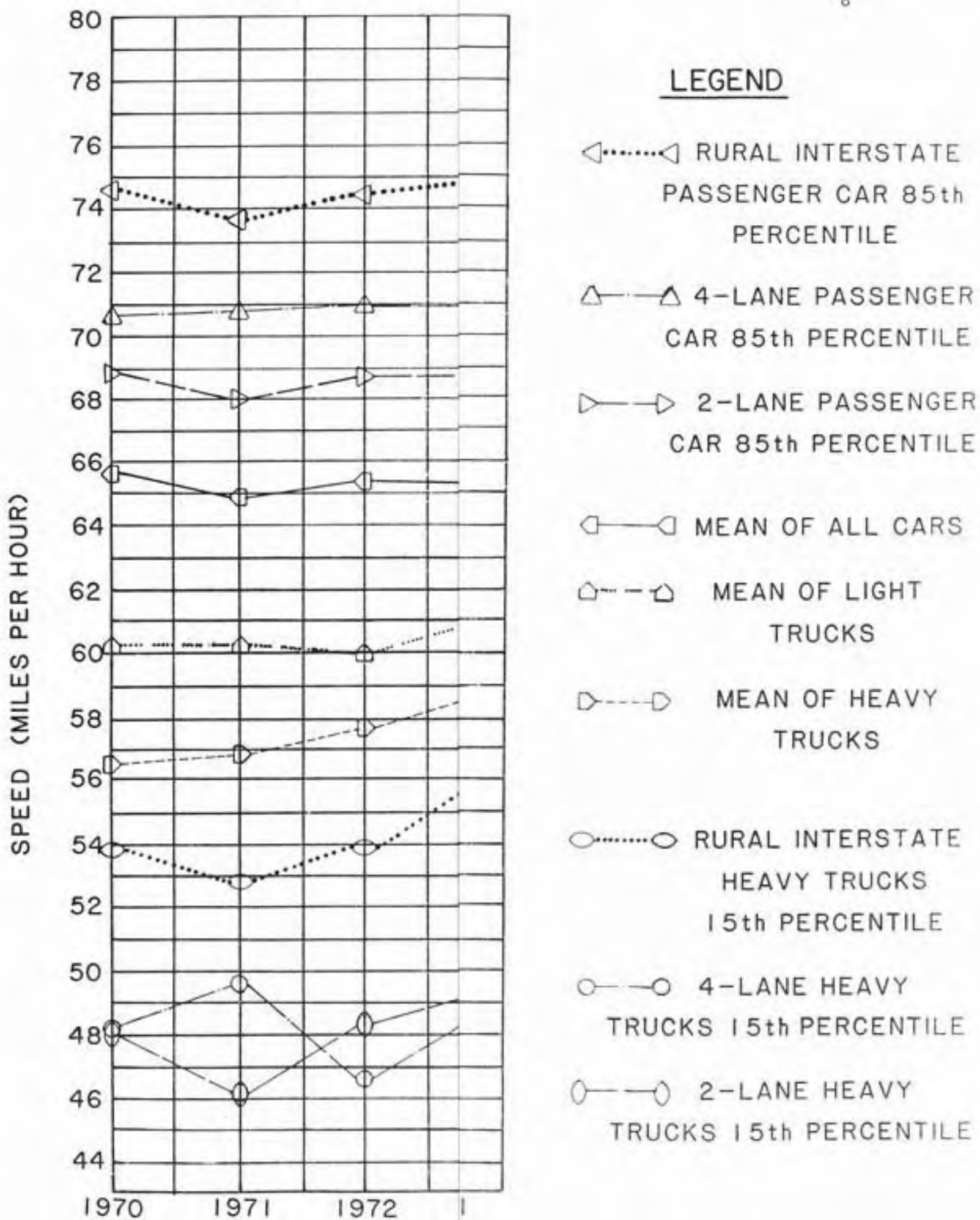


FIG. 2:

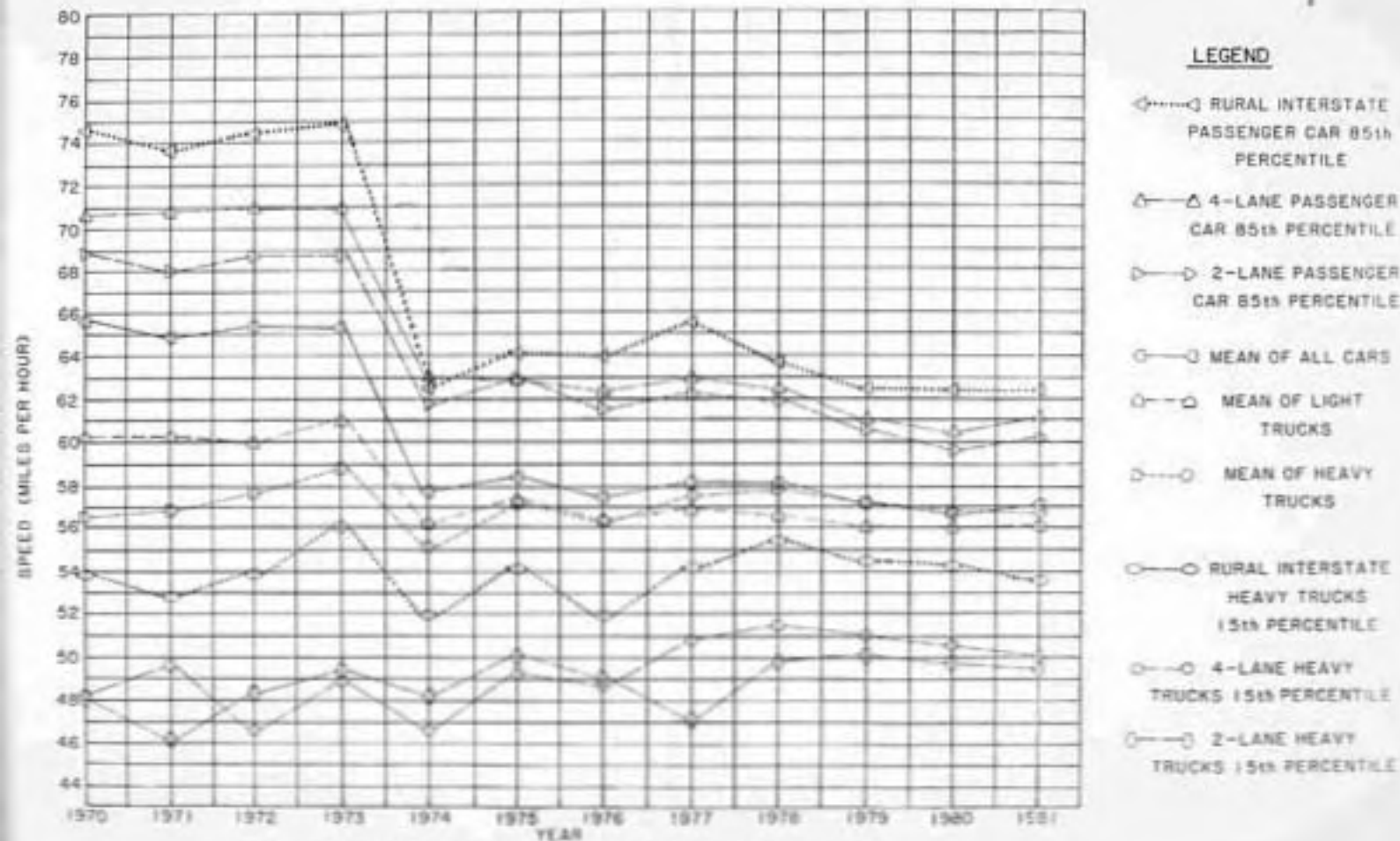


FIG. 2: INDIANA RURAL SPEED TRENDS 1970-1981

constant until 1978, except for a slight drop in 1976. A slight drop in mean speeds occurred in 1979 and they have remained almost constant since then.

Since the average speeds are in most cases almost the same for the 12 rural highway stations and the 12 rural highway and 2 urban interstate stations combined (Table 7), there is no reason to expect the results to change if the urban interstate stations are included in the analysis.

The 85th percentile speed of cars on all rural highways decreased sharply between 1973 and 1974. They increased a little in 1975, but remained fairly constant until 1978, except for an increase of 1.5 mph in the 85th percentile speed of cars on rural interstates in 1977. The 85th percentile speed remained the same on the rural interstates from 1979 to 1981. For the other rural highways it showed a slight reduction in 1980 (Figure 2).

The 15th percentile speeds of heavy trucks on rural highways showed no marked change since 1974. The 15th percentile speed of heavy trucks on rural interstates is basically the same as in 1970. The 15th percentile speed of heavy trucks on the other rural highways increased a little. There seems to be a slight downward trend in the 15th percentile speed of heavy trucks on rural highways from 1978 to 1981 (Figure 2).

The difference in 85th percentile of passenger cars and the 15th percentile of heavy trucks on all rural highways was reduced sharply from 1973 to 1974. Since then it remained fairly constant until 1981, with the smallest and most constant differences during 1978 to 1981.

The average speeds of vehicles on all highways seem to have remained essentially the same since 1979. The difference in 85th percentile speeds of passenger cars and 15th percentile speeds of heavy trucks remained almost the same since 1978 on all rural highways and is much less than what it was before 1973.

APPENDIX A**Speed Data (Tables A1 to A19)**

TABLE A1 SPEED DATA

STATION RI-6 HIGHWAY I-65 LOCATION 7.5 miles north of SR 160 WEATHER Sunny-Hot
 NO. OF LANES 4 TYPE OF SURFACE Blacktop

THIS OBSERVATION DATE 6-9-81
 LAST PREVIOUS OBSERVATION (SPEED REPORT NO. 114)
 DATE 6-11-80
 TIME 1:00-1:45 p.m. NB
 TIME 10:50 a.m. - 12:05 p.m. NB
 12:01-12:45 p.m. SB
 8:30 - 9:50 a.m. SB

OBSERVATION	PASSENGER CARS				NON-INDIANA				TRUCKS			
	ALL		INDIANA		PRES-		ALL		<5000 LBS.		>5000 LBS.	
	LAST	PRES- ENT	LAST	PRES- ENT	LAST	PRES- ENT	LAST	PRES- ENT	LAST	PRES- ENT	LAST	PRES- ENT
NUMBER OF VEHICLES	281	251	127	102	154	149	145	171	62	41	83	130
AVE. SPEED (MPH)	59.20	59.67	56.20	53.61	60.00	60.39	58.20	59.32	57.20	57.46	58.90	59.90
STANDARD DEVIATION	4.195	5.269	4.133	5.521	4.082	4.381	4.266	4.592	4.441	5.090	4.013	4.421
PERCENT												
OF												
VEHICLES	1.1	1.6	.8	1.0	.6	1.3	.7	0	1.6	0	0	0
TRAVELING	10.3	10.0	13.4	14.7	7.8	6.7	2.8	2.9	4.8	7.3	1.2	1.5
LESS THAN	54.4	51.4	63.0	57.8	47.4	47.0	62.1	55.0	22.6	24.4	12.0	13.1
OR	91.8	86.9	95.3	94.1	89.0	81.9	93.8	85.0	67.7	65.9	57.8	51.5
EQUAL TO	90.9	96.0	99.2	98.0	98.7	94.6	100.0	99.4	96.8	92.7	91.6	83.8
	100.0	97.6	100.0	98.0	100.0	97.3	100.0	100.0	100.0	100.0	100.0	99.2
	100.0	99.6	100.0	99.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	100.0	99.5	100.0	99.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
DIRECTION												
NB # OF VEHICLES	140	128	65	51	75	77	74	82	25	20	49	62
AVERAGE SPEED	59.20	59.02	58.00	58.61	60.30	59.30	58.60	58.40	57.30	56.95	59.30	58.07
SB # OF VEHICLES	141	123	62	51	73	72	71	89	37	21	34	68
AVERAGE SPEED	59.20	60.33	58.50	58.61	59.80	61.56	57.70	60.16	57.20	57.55	58.30	60.84

TABLE A3 SPEED DATA

STATION RI-12 HIGHWAY I-74 LOCATION 0.1 mile west of 109 mile marker

NO. OF LANES 4 TYPE OF SURFACE Concrete WEATHER Cloudy

THIS OBSERVATION LAST PREVIOUS OBSERVATION (SPEED REPORT NO. 114)

DATE 6-10-81

DATE 7-31-80

TIME 11:35 a.m. - 12:20 p.m. EB

TIME 10:40-11:20 a.m. EB

10:40 a.m. - 11:20 a.m. WB

11:25 a.m. - 12:05 p.m. WB

OBSERVATION	PASSENGER CARS				ALL				TRUCKS			
	ALL		INDIANA		NON-INDIANA		ALL		<5000 LBS.		>5000 LBS.	
	LAST	PRES- ENT	LAST	PRES- ENT	LAST	PRES- ENT	LAST	PRES- ENT	LAST	PRES- ENT	LAST	PRES- ENT
NUMBER OF VEHICLES	263	273	195	176	58	97	167	153	76	55	91	98
AVE. SPEED (MPH)	58.30	58.70	58.00	57.99	59.20	59.98	58.50	59.05	57.90	59.02	58.90	59.07
STANDARD DEVIATION	4.072	4.980	4.065	4.823	3.991	5.029	4.700	4.319	4.760	4.528	4.622	4.221
PERCENT												
OF												
VEHICLES												
TRAVELING												
LESS THAN												
OR												
EQUAL TO												
24 MPH	0	0	0	0	0	0	0	0	0	0	0	0
29 MPH	0	0	0	0	0	0	0	0	0	0	0	0
34 MPH	0	0	0	0	0	0	0	0	0	0	0	0
39 MPH	0	0	0	0	0	0	0	0	0	0	0	0
44 MPH	0	0	0	0	0	0	0	0	0	0	0	0
49 MPH	0	0	0	0	0	0	0	0	0	0	0	0
54 MPH	0	0	0	0	0	0	0	0	0	0	0	0
59 MPH	0	0	0	0	0	0	0	0	0	0	0	0
64 MPH	0	0	0	0	0	0	0	0	0	0	0	0
69 MPH	0	0	0	0	0	0	0	0	0	0	0	0
74 MPH	0	0	0	0	0	0	0	0	0	0	0	0
79 MPH	0	0	0	0	0	0	0	0	0	0	0	0
84 MPH	0	0	0	0	0	0	0	0	0	0	0	0
89 MPH	0	0	0	0	0	0	0	0	0	0	0	0
DIRECTION												
EB # OF VEHICLES	129	127	94	83	35	44	05	87	43	29	42	58
AVERAGE SPEED	58.70	59.02	58.50	59.01	59.20	59.02	59.20	59.53	58.50	60.14	59.80	59.22
WB # OF VEHICLES	134	145	101	93	33	53	82	66	33	26	49	40
AVERAGE SPEED	58.00	58.42	57.60	57.03	59.20	60.77	57.00	58.42	57.10	57.77	58.20	58.85

TABLE A5 SPEED DATA

STATION 4L-17 HIGHWAY US 52 LOCATION 150 feet east of county road 475 west

NO. OF LANES 4 TYPE OF SURFACE Blacktop WEATHER Clear

THIS OBSERVATION LAST PREVIOUS OBSERVATION (SPEED REPORT NO. 114)

DATE 6-1-81

DATE 7-28-80 7-29-80

TIME 8:45 - 10:05 a.m.

TIME 9:05-10:20 a.m.

EB

WB

OBSERVATION	PASSENGER CARS				ALL				TRUCKS			
	ALL		INDIANA		NON-INDIANA		ALL		<5000 LBS.		>5000 LBS.	
	LAST	PRES- ENT	LAST	PRES- ENT	LAST	PRES- ENT	LAST	PRES- ENT	LAST	PRES- ENT	LAST	PRES- ENT
NUMBER OF VEHICLES	284	305	257	273	27	32	143	118	74	56	59	52
AVE. SPEED (MPH)	55.70	56.36	55.60	56.08	57.20	58.75	56.20	56.18	55.20	55.52	57.30	56.77
STANDARD DEVIATION	5.500	5.239	5.530	5.249	5.069	4.565	5.655	5.664	4.914	4.585	6.215	6.467
PERCENT	0	0	0	0	0	0	0	0	0	0	0	0
OF	0	0	0	0	0	0	0	0	0	0	0	0
VEHICLES	0	.3	0	.4	0	0	0	0	0	0	0	0
TRAVELING	.7	.7	.8	.7	0	0	.7	0	1.4	0	0	0
LESS THAN	2.8	1.0	3.1	1.1	0	0	2.1	4.2	2.7	1.8	1.4	6.5
OR	10.6	8.9	10.5	9.9	11.1	0	11.2	11.0	10.8	10.7	11.6	11.3
EQUAL TO	37.3	33.8	38.5	35.9	25.9	15.6	36.4	35.6	39.2	39.3	33.3	32.3
	78.2	75.1	79.4	77.3	66.7	56.3	73.4	72.9	83.8	82.1	62.3	64.5
	95.1	94.1	95.3	94.9	92.6	87.5	92.3	94.9	97.3	100.0	87.0	90.3
	99.3	99.7	99.2	99.6	100.0	100.0	98.6	100.0	100.0	100.0	97.1	100.0
	99.5	100.0	99.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
DIRECTION												
EB	145	154	127	139	18	15	69	57	41	26	26	31
AVERAGE SPEED	57.30	56.91	57.20	56.63	57.80	59.47	57.90	55.51	55.70	55.38	61.00	55.61
WB	139	151	130	134	9	17	74	61	33	30	41	31
AVERAGE SPEED	54.10	55.81	54.00	55.51	56.00	58.12	54.70	56.80	54.60	55.63	54.70	57.94

TABLE A6 SPEED DATA

STATION 4L-32 HIGHWAY US 30 LOCATION 2.9 miles west of Manatah city limit sign
 NO. OF LANES 4 TYPE OF SURFACE Blacktop WEATHER Cloudy

LAST PREVIOUS OBSERVATION (SPEED REPORT NO. 114)

THIS OBSERVATION
 DATE 6-12-81
 TIME 11:05-11:50 a.m. EB

DATE 8-1-80
 TIME 11:00-11:50 a.m. EB

10:15-10:55 a.m. WB

OBSERVATION	ALL		PASSENGER CARS		NON-INDIANA		ALL		TRUCKS		PRES-ENT
	LAST	PRES-ENT	LAST	PRES-ENT	LAST	PRES-ENT	LAST	PRES-ENT	LAST	PRES-ENT	
NUMBER OF VEHICLES	268	271	189	187	79	84	163	149	57	56	93
AVE. SPEED (MPH)	57.10	57.36	56.90	57.09	57.70	57.98	56.70	57.53	56.50	57.04	57.83
STANDARD DEVIATION	4.448	4.683	4.469	4.936	4.367	4.042	4.686	4.982	4.606	5.067	4.934
PERCENT OF VEHICLES TRAVELING LESS THAN OR EQUAL TO	24 MPH	0	0	0	0	0	0	0	0	0	0
	29 MPH	0	0	0	0	0	0	0	0	0	0
	34 MPH	0	0	0	0	0	0	0	0	0	0
	39 MPH	0	0	0	0	0	0	0	0	0	1.1
	44 MPH	0	0	0	0	0	0	0	0	0	2.2
	49 MPH	0	0	0	0	0	0	0	0	0	4.3
	54 MPH	5.6	7.4	5.9	1.3	1.2	4.9	6.0	3.5	8.9	21.5
	59 MPH	25.7	26.5	26.7	24.1	20.2	30.7	21.5	35.1	21.4	63.4
	64 MPH	70.5	69.8	72.2	72.2	66.7	75.5	65.8	84.2	69.6	92.5
	69 MPH	95.5	95.8	94.1	92.4	94.0	95.1	92.6	93.0	92.9	98.9
	74 MPH	99.3	100.0	99.5	98.7	98.8	99.4	98.7	98.2	98.2	100.0
	79 MPH	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	84 MPH	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	89 MPH	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
DIRECTION											
EB # OF VEHICLES	134	131	84	82	50	49	82	79	32	29	50
AVERAGE SPEED	57.60	57.32	57.10	56.65	58.40	58.43	57.30	57.25	56.60	56.83	57.50
WB # OF VEHICLES	134	140	105	105	29	35	81	70	25	27	43
AVERAGE SPEED	56.70	57.40	56.70	57.42	56.60	57.34	56.00	57.84	56.40	57.26	58.21

TABLE A13 SPEED DATA

STATION	UI-6	HIGHWAY	I-65	LOCATION	Just east of White River	WEATHER	Cloudy	
NO. OF LANES	6	TYPE OF SURFACE	Concrete	LAST PREVIOUS OBSERVATION (SPEED REPORT NO. 114)				
THIS OBSERVATION				DATE	8-10-80			
				TIME	10:00-10:30 a.m.	EB		
				TIME	11:40 a.m. - 12:05 p.m.	WB		
OBSERVATION	PASSENGER CARS				TRUCKS			
	ALL		INDIANA		NON-INDIANA		ALL	
	LAST	PRES-ENT	LAST	PRES-ENT	LAST	PRES-ENT	LAST	PRES-ENT
NUMBER OF VEHICLES	317	278	288	216	29	62	113	149
AVE. SPEED (MPH)	58.20	59.34	58.00	59.11	59.40	50.15	57.10	57.89
STANDARD DEVIATION	4.153	4.759	4.139	5.012	4.170	3.670	4.594	4.471
PERCENT	0	0	0	0	0	0	0	0
OF	0	0	0	0	0	0	0	0
VEHICLES	0	0	0	0	0	0	0	0
TRAVELING	0	0	0	0	0	0	0	0
LESS THAN	0	0	0	0	0	0	0	0
OR	0	0	0	0	0	0	0	0
EQUAL TO	0	0	0	0	0	0	0	0
24 MPH	0	0	0	0	0	0	0	0
29 MPH	0	0	0	0	0	0	0	0
34 MPH	0	0	0	0	0	0	0	0
39 MPH	0	0	0	0	0	0	0	0
44 MPH	0	0	0	0	0	0	0	0
49 MPH	0	0	0	0	0	0	0	0
54 MPH	0	0	0	0	0	0	0	0
59 MPH	0	0	0	0	0	0	0	0
64 MPH	0	0	0	0	0	0	0	0
69 MPH	0	0	0	0	0	0	0	0
74 MPH	0	0	0	0	0	0	0	0
79 MPH	0	0	0	0	0	0	0	0
84 MPH	0	0	0	0	0	0	0	0
89 MPH	0	0	0	0	0	0	0	0
DIRECTION	147	141	133	112	14	29	67	75
# OF VEHICLES	58.20	59.77	58.00	59.71	60.10	60.03	57.00	58.15
AVERAGE SPEED	170	137	155	104	15	33	46	74
# OF VEHICLES	58.10	58.90	58.10	58.47	58.70	60.24	57.30	57.62
AVERAGE SPEED								

TABLE A14 SPEED DATA

STATION UT-1 HIGHWAY I 80 LOCATION First bridge east of Burr Street interchange
 NO. OF LANES 6 TYPE OF SURFACE Blacktop WEATHER Cloudy

THIS OBSERVATION

DATE 6-11-81
 TIME 11:10-11:35 a.m. EB
 11:15-11:45 a.m. WB

LAST PREVIOUS OBSERVATION (SPEED REPORT NO. 114)
 DATE 3-30-80
 TIME 12:58-1:20 p.m. EB
 10:30-11:02 a.m. WB

OBSERVATION	PASSENGER CARS			NON-INDIANA			ALL			TRUCKS		
	ALL	PRES-ENT	LAST	PRES-ENT	LAST	PRES-ENT	PRES-ENT	LAST	PRES-ENT	PRES-ENT	LAST	PRES-ENT
NUMBER OF VEHICLES	198	232	133	153	65	79	235	189	69	49	166	140
AVE. SPEED (MPH)	56.40	56.19	56.10	55.65	57.20	57.22	55.50	55.83	54.90	55.51	55.70	56.02
STANDARD DEVIATION	5.811	4.303	5.552	4.355	3.829	4.031	4.452	4.505	4.492	3.742	4.428	4.748
PERCENT	0	0	0	0	0	0	0	0	0	0	0	0
OF	0	0	0	0	0	0	0	0	0	0	0	0
VEHICLES	5.1	1.3	6.0	2.0	3.1	5.1	2.6	1.6	2.9	0	2.4	2.1
TRAVELING	27.3	7.3	29.3	33.3	23.1	19.0	37.9	37.0	10.1	2.0	9.0	11.4
LESS THAN	76.3	75.9	80.5	79.1	67.7	69.6	85.1	78.3	40.6	49.0	36.7	32.9
OR	98.0	98.7	97.7	98.7	98.5	99.7	99.6	99.5	85.5	85.7	84.9	76.4
EQUAL TO	98.5	98.0	97.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	99.3
	99.0	100.0	93.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	100.0	100.0	93.2	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.6	100.0
	100.0	100.0	93.2	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.6	100.0
	100.0	100.0	99.2	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.6	100.0
DIRECTION												
EB # OF VEHICLES	97	129	64	30	33	49	117	81	37	28	80	53
AVERAGE SPEED	56.80	56.57	56.30	56.19	57.60	57.20	56.00	55.93	55.70	56.00	56.10	55.98
WB # OF VEHICLES	101	103	69	73	32	30	118	108	32	21	86	87
AVERAGE SPEED	56.10	55.70	55.90	55.07	56.70	57.23	54.90	55.81	53.90	54.86	55.30	56.05

